

APPENDIX 'A'

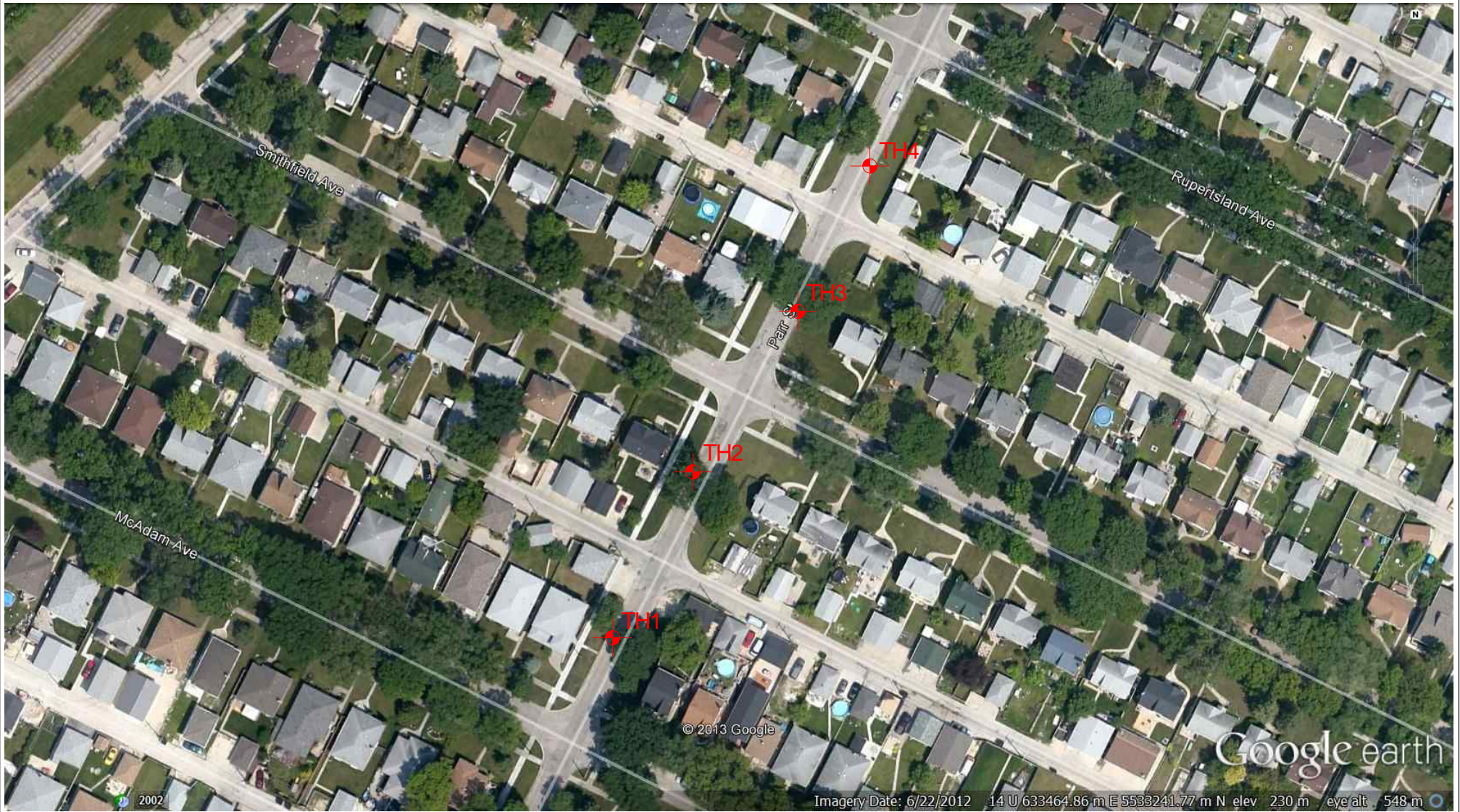
GEOTECHNICAL REPORT

**2013 LOCAL STREET RENEWALS
PARR STREET
MCADAM AVENUE TO RUPERTSLAND AVENUE
GEOTECHNICAL INVESTIGATION**

Prepared for
**MMM GROUP LIMITED
111 – 93 LOMBARD AVENUE
WINNIPEG, MANITOBA
R3B 3B1**

Prepared by
**THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4**

August 8, 2013



**THE
NATIONAL
TESTING
LABORATORIES
LIMITED**
Established in 1923

Project No. MMM-1307

Drawn by: NB

Figure: 1

**Testhole Location Plan
2013 Local Street Renewals
Parr Street
McAdam Ave. to Rupertsland Ave.**

Date: August 2, 2013

Reviewed by: GL

Scale: NTS

TESTHOLE TH1



Project Name: 2013 Local Street Renewals
Project Location: Parr Street, McAdam Avenue to Rupertsland Avenue
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 22 m north from northwest corner of Parr Street & McAdam Avenue, 1 m from west curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
0.0 - 0.1	[Concrete symbol]	Concrete							
0.1 - 0.5	[Clay Fill symbol]	Clay Fill - black, stiff, moist, medium plasticity - trace organic material - trace medium sand	BS					●29	
0.5 - 1.5	[Clayey Silt symbol]	Clayey Silt - tan, soft, moist, low plasticity - trace fine to medium sand	BS	0.0	3.2	69.5	27.3	●16	
1.5 - 2.1	[Clay symbol]	Clay - brown, firm, moist, high plasticity	BS					●21	
			BS					●23	
			BS					●33	
			BS					●34	
			BS					●43	

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH2



Project Name: 2013 Local Street Renewals
Project Location: Parr Street, McAdam Avenue to Rupertsland Avenue
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 19 m south from southwest corner of Parr Street & Smithfield Avenue, 1 m from west curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Concrete					
		Clay Fill - black, firm, moist, medium plasticity - some fine to coarse sand - trace coarse gravel	BS		●26		
			BS		●32		
0.5		Clayey Silt - tan, soft, moist, low plasticity	BS		●17		
1.0		Clay - brown, firm, moist, high plasticity - trace fine gravel below 1.5 m - stiff below 1.7 m	BS		●34		
			BS		●39		
1.5			BS		●36		
			BS		●36		
2.0			BS		●48		

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH3



Project Name: 2013 Local Street Renewals
Project Location: Parr Street, McAdam Avenue to Rupertsland Avenue
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 18 m north from northeast corner of Parr Street & Smithfield Avenue, 1 m from east curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
0.0 - 0.1	[Concrete symbol]	Concrete							
0.1 - 0.6	[Clay Fill symbol]	Clay Fill - black, firm, moist, medium plasticity - some fine to coarse sand - some fine to coarse gravel - some silt Clay - black, stiff, moist, high plasticity - some silt - trace fine gravel - trace organic material - grey below 0.6 m	BS					14	
0.6 - 0.7	[Clay Fill symbol]		BS					33	
0.7 - 0.8	[Clay Fill symbol]		BS	0.5	4.5	8.3	86.7	35	
0.8 - 1.0	[Clay Fill symbol]		BS					33	
1.0 - 1.5	[Clay Fill symbol]		BS					33	
1.5 - 1.6	[Clay Fill symbol]		BS					29	
1.6 - 2.0	[Clayey Silt symbol]	Clayey Silt - tan, soft, moist, low plasticity	BS					22	
2.0 - 2.1	[Clayey Silt symbol]		BS					22	

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH4



Project Name: 2013 Local Street Renewals
Project Location: Parr Street, McAdam Avenue to Rupertsland Avenue
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 29 m south from southeast corner of Parr Street & Rupertsland Avenue, 1 m from east curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Concrete symbol]	Concrete					
0.1 - 0.6	[Clay Fill symbol]	Clay Fill - black, firm, moist, medium plasticity - some silt - some fine to coarse sand - trace fine gravel	BS	●21			
0.6 - 1.0	[Clay symbol]	Clay - grey, stiff, moist, high plasticity - trace fine to coarse sand - trace fine gravel - trace silt	BS	●22			
1.0 - 1.9	[Clayey Silt symbol]	Clayey Silt - tan, soft, moist, low plasticity	BS	●30			
1.9 - 2.1	[Clay symbol]	Clay - brown, firm, moist, high plasticity	BS	●29			
			BS	●21			
			BS	●24			
			BS	●24			
			BS	●39			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.



Core sample from Testhole TH1



Core sample from Testhole TH2



Core sample from Testhole TH3



Core sample from Testhole TH4

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
 111 - 93 Lombard Avenue
 Winnipeg, MB
 R3B 3B1

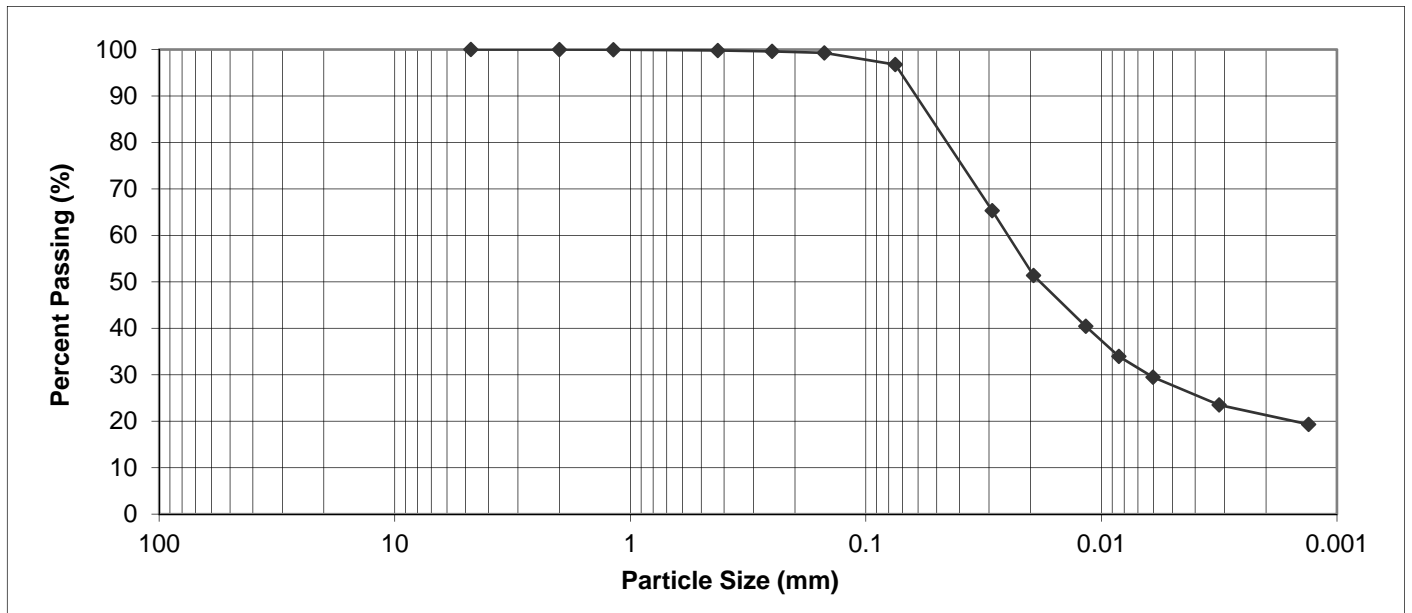
PROJECT: 2013 Local Street Renewals
 Parr Street
 McAdam Ave to Rupertsland Ave

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH1 at 0.6 m

DATE RECEIVED: July 24, 2013
 TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	100.0
0.425 mm	99.8
0.250 mm	99.6
0.150 mm	99.3
0.075 mm	96.8
0.005 mm	27.3
0.002 mm	20.9
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.2	3.0	69.5	27.3	NT*

NT* Sample not tested for colloids

August 7, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
 111 - 93 Lombard Avenue
 Winnipeg, MB
 R3B 3B1

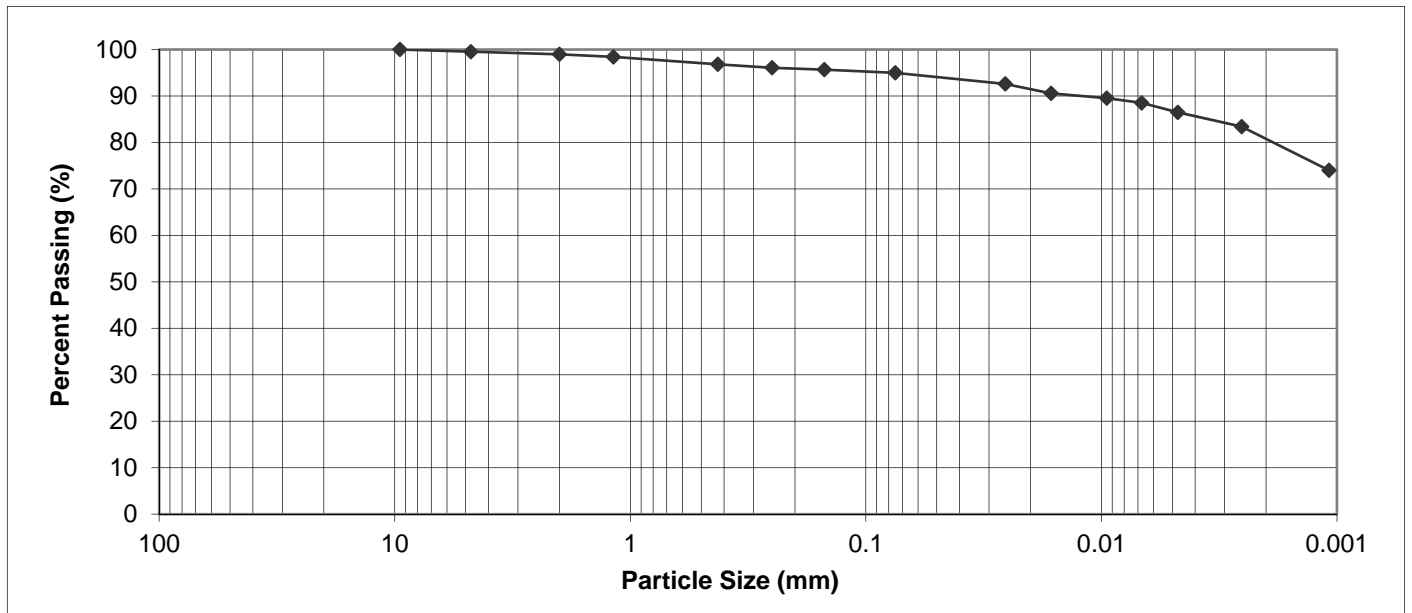
PROJECT: 2013 Local Street Renewals
 Parr Street
 McAdam Ave to Rupertsland Ave

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH3 at 0.6 m

DATE RECEIVED: July 24, 2013
 TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.5
2.00 mm	99.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.4
0.425 mm	96.8
0.250 mm	96.1
0.150 mm	95.7
0.075 mm	95.0
0.005 mm	86.7
0.002 mm	79.9
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.5	0.5	2.2	1.8	8.3	86.7	NT*

NT* Sample not tested for colloids

August 7, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng

**2013 LOCAL STREET RENEWALS
FRASERS GROVE
WOODVALE STREET TO HENDERSON HIGHWAY
GEOTECHNICAL INVESTIGATION**

Prepared for
**MMM GROUP LIMITED
111 – 93 LOMBARD AVENUE
WINNIPEG, MANITOBA
R3B 3B1**

Prepared by
**THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4**

August 8, 2013



**THE
NATIONAL
TESTING
LABORATORIES
LIMITED**
Established in 1923

Project No. MMM-1307

Drawn by: NB

Figure: 1

Date: August 2, 2013

Reviewed by: GL

Scale: NTS

Testhole Location Plan
2013 Local Street Renewals
Frasers Grove
Woodvale St. to Henderson Hwy.

TESTHOLE TH1



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 1 m west from property line between 108 & 112 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
		Granular Fill - 30 mm maximum aggregate size	BS						●4
		Clay Fill - brown, firm, moist, high plasticity - trace organic material - trace fine to coarse sand - trace fine gravel - silty	BS						●23
0.5			BS	4.6	11.4	27.6	56.4		●21
		Clay - black, firm, moist, high plasticity - brown below 1.8 m	BS						●22
1.0			BS						●34
1.5			BS						●30
2.0			BS						●26
			BS						●25

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH2



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 1 m east from property line between 120 & 124 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Asphalt symbol]	Asphalt					
0.1 - 0.2	[Concrete symbol]	Concrete					
0.2 - 1.0	[Clay Fill symbol]	Clay Fill - brown, soft, moist, high plasticity - silty - black, stiff below 0.3 m - some fine to coarse sand - some fine to coarse gravel - trace organic material	BS	●13			
			BS	●25			
			BS	●27			
			BS	●18			
1.0 - 1.8	[Clay symbol]	Clay - grey, stiff, moist, high plasticity - brown below 1.8 m	BS	●29			
1.8 - 2.1	[Silt symbol]	Silt - tan, firm, moist, low plasticity	BS	●25			
			BS	●22			
			BS	●24			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH3



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 2 m east from property line between 128 & 132 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Asphalt symbol]	Asphalt					
0.1 - 0.2	[Concrete symbol]	Concrete					
0.2 - 0.8	[Clay Fill symbol]	Clay Fill - brown, firm, moist, high plasticity - silty - some fine to coarse sand - trace fine to coarse gravel	BS	●21			
0.8 - 1.0	[Clay symbol]	Clay - brown, stiff, moist, high plasticity	BS	●32			
1.0 - 1.8	[Clay symbol]	Clay - brown, stiff, moist, high plasticity	BS	●32			
1.8 - 2.0	[Silt symbol]	Silt - tan, firm, moist, low plasticity	BS	●31			
2.0 - 2.1	[Silt symbol]	Silt - tan, firm, moist, low plasticity	BS	●29			
2.0 - 2.1	[Silt symbol]	Silt - tan, firm, moist, low plasticity	BS	●24			
2.0 - 2.1	[Silt symbol]	Silt - tan, firm, moist, low plasticity	BS	●25			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH4



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 7.5 m west from property line between 148 & 152 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt Concrete							
		Clay Fill - brown, firm, moist, high plasticity - silty - some fine to coarse sand - trace fine to coarse gravel	BS					15	
			BS					21	
0.5		Clay - grey, stiff, moist, high plasticity - trace fine to medium sand - some silt - brown below 1.7 m	BS					33	
1.0			BS	0.0	0.5	12.6	86.9	32	100
1.5			BS					32	
2.0		Silt - tan, firm, moist, low plasticity	BS					30	
2.1			BS					24	

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH5



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 7 m east from property line between 160 & 164 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Asphalt symbol]	Asphalt					
0.1 - 0.2	[Concrete symbol]	Concrete					
0.2 - 0.4	[Clay Fill symbol]	Clay Fill - brown, firm, moist, high plasticity - silty - some fine to coarse sand - trace fine to coarse gravel	BS	●17			
0.4 - 0.5	[Clay symbol]	Clay - black, stiff, moist, high plasticity - trace fine to coarse sand - grey below 1.2 m - black below 1.8 m	BS		●33		
0.5 - 0.8	[Clay symbol]		BS			●35	
0.8 - 1.0	[Clay symbol]		BS				●29
1.0 - 1.3	[Clay symbol]		BS				●29
1.3 - 1.5	[Clay symbol]		BS				●29
1.5 - 1.8	[Clay symbol]		BS				●38
1.8 - 2.1	[Clay symbol]		BS				●35

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH6



Project Name: 2013 Local Street Renewals
Project Location: Frasers Grove, Woodvale Street to Henderson Highway
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 6 m west from property line between 168 & 172 Frasers Grove, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.05	[Asphalt symbol]	Asphalt					
0.05 - 0.1	[Concrete symbol]	Concrete					
0.1 - 2.1	[Clay Fill symbol]	Clay Fill - brown, firm, moist, high plasticity - some fine to coarse sand - trace fine to coarse gravel - stiff below 0.3 m - trace organic material to a depth of 0.6 m - grey below 1.2 m - black below 1.8 m	BS	●18			
			BS	●30			
			BS	●32			
			BS	●21			
			BS	●20			
			BS	●22			
			BS	●22			
			BS	●26			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.



Core sample from Testhole TH1



Core sample from Testhole TH2



Core sample from Testhole TH3



Core sample from Testhole TH4



Core sample from Testhole TH5



Core sample from Testhole TH6

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
111 - 93 Lombard Avenue
Winnipeg, MB
R3B 3B1

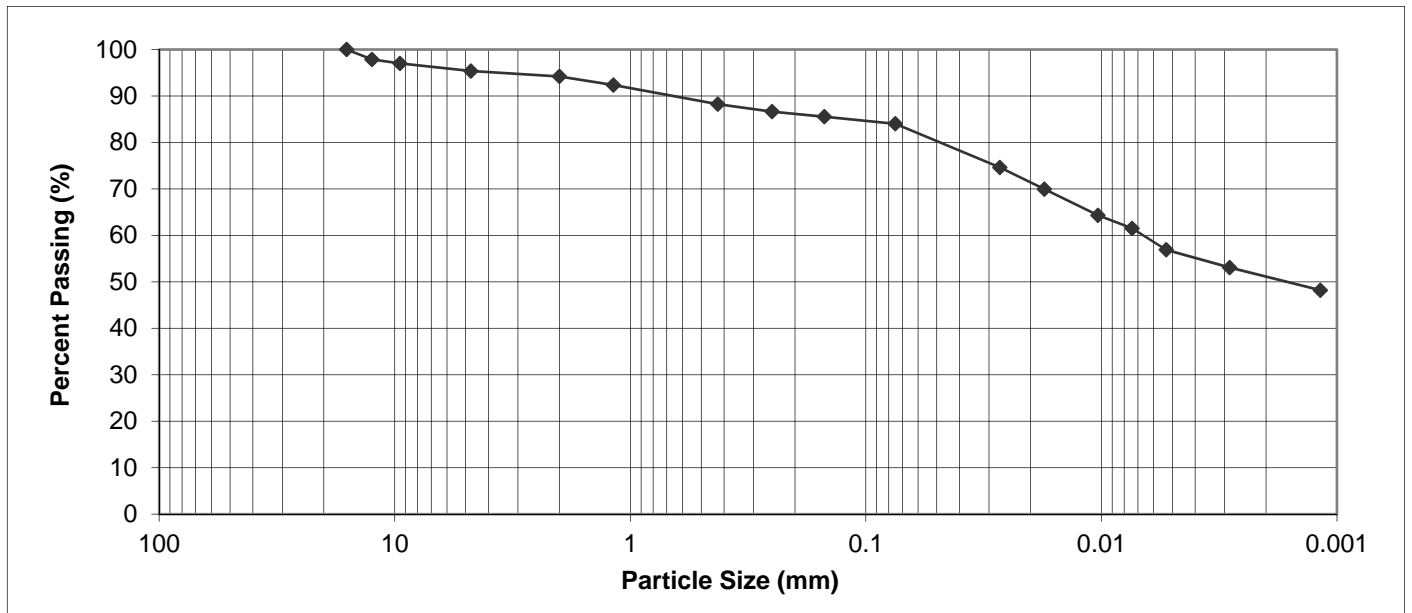
PROJECT: 2013 Local Street Renewals
Fraser's Grove
Woodvale St to Henderson Hwy

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
SAMPLE ID: TH1 at 0.6 m

DATE RECEIVED: July 24, 2013
TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	97.9
9.50 mm	97.0
4.75 mm	95.4
2.00 mm	94.2

PARTICLE SIZE	PERCENT PASSING
1.18 mm	92.3
0.425 mm	88.2
0.250 mm	86.6
0.150 mm	85.5
0.075 mm	84.0
0.005 mm	56.4
0.002 mm	50.6
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
4.6	1.2	6.0	4.2	27.6	56.4	NT*

NT* Sample not tested for colloids

August 7, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
111 - 93 Lombard Avenue
Winnipeg, MB
R3B 3B1

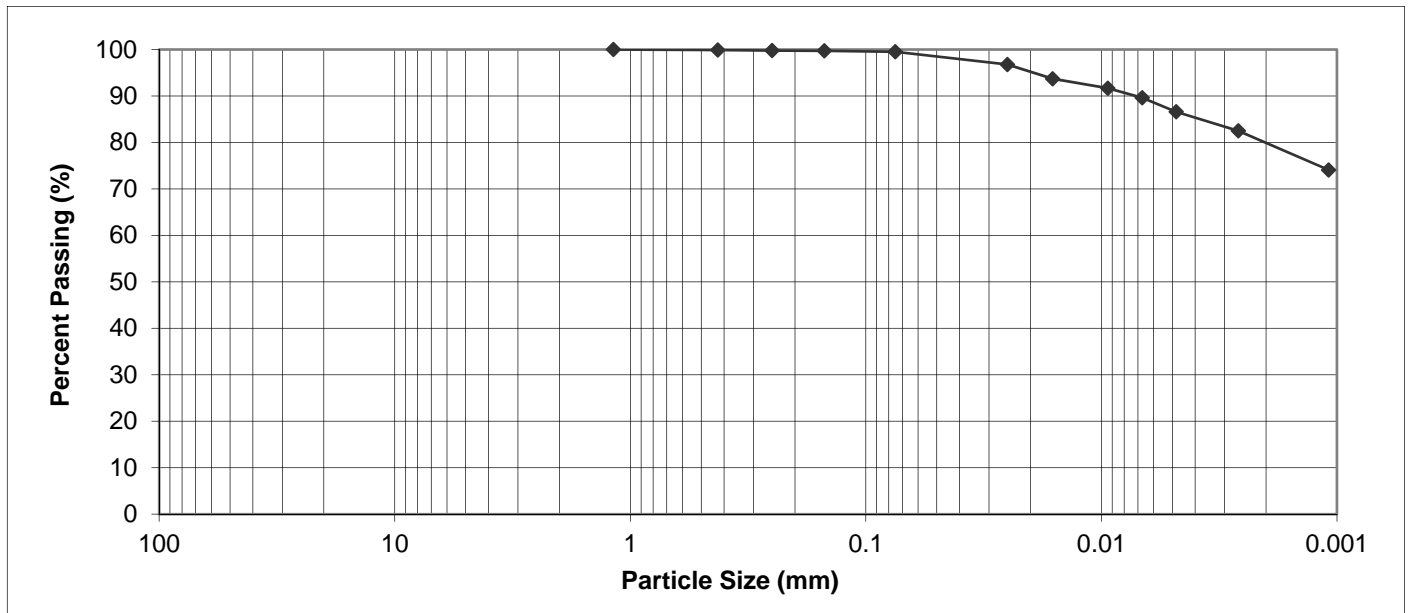
PROJECT: 2013 Local Street Renewals
Fraser's Grove
Woodvale St to Henderson Hwy

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
SAMPLE ID: TH4 at 0.9 m

DATE RECEIVED: July 24, 2013
TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	100.0
0.425 mm	99.9
0.250 mm	99.8
0.150 mm	99.7
0.075 mm	99.5
0.005 mm	86.9
0.002 mm	79.1
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.1	0.4	12.6	86.9	NT*

NT* Sample not tested for colloids

August 7, 2013

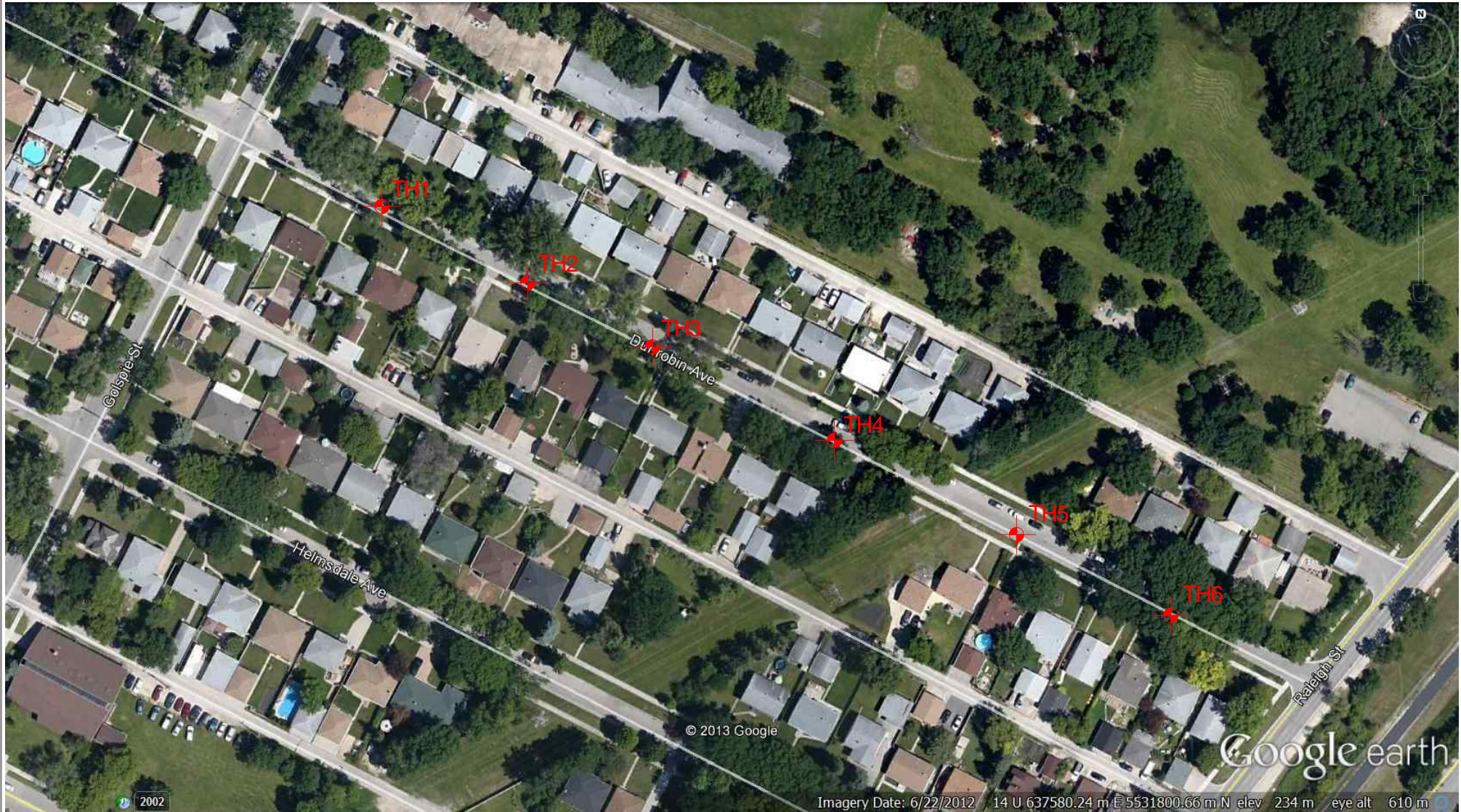
REVIEWED BY: German E. Leal, B.Sc., P. Eng

**2013 LOCAL STREET RENEWALS
DUNROBIN AVENUE
GOLSPIE STREET TO RALEIGH STREET
GEOTECHNICAL INVESTIGATION**

Prepared for
**MMM GROUP LIMITED
111 – 93 LOMBARD AVENUE
WINNIPEG, MANITOBA
R3B 3B1**

Prepared by
**THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4**

August 8, 2013



**THE
NATIONAL
TESTING
LABORATORIES
LIMITED**
Established in 1923

Project No. MMM-1307

Drawn by: NB

Figure: 1

**Testhole Location Plan
2013 Local Street Renewals
Dunrobin Avenue
Golspie Street to Raleigh Street**

Date: August 1, 2013

Reviewed by: GL

Scale: NTS

TABLE 1
2013 LOCAL STREET RENEWALS
DUNROBIN AVENUE, GOLSPIE STREET TO RALEIGH STREET
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	5 m west from property line between 610 & 614 Dunrobin Avenue 1 m from south curb	Asphalt	15	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	150												
TH2	2 m west from property line between 622 & 626 Dunrobin Avenue 1 m from south curb	Asphalt	35	-	-	Clay	0.6	35	0.3	3.6	3.4	92.7	89	27	62
		Concrete	165												
TH3	6 m west from property line between 634 & 638 Dunrobin Avenue 1 m from south curb	Asphalt	20	-	-	Clay	0.6	36	0.1	1.5	8.4	90.0	88	26	62
		Concrete	155												
TH4	9 m east from property line between 646 & 650 Dunrobin Avenue 1 m from south curb	Asphalt	30	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	160												
TH5	1 m east from property line between 656 & 662 Dunrobin Avenue 1 m from south curb	Asphalt	40	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	150												
TH6	5 m west from property line between 680 & 686 Dunrobin Avenue 1 m from south curb	Asphalt	30	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	150												

TESTHOLE TH1



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 5 m west from property line between 610 & 614 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Asphalt					
0.1 - 0.2		Concrete					
0.2 - 1.5		Clay - black, firm, moist, high plasticity - trace organic material - some fine to coarse sand - trace fine gravel - stiff below 0.6 m - grey below 0.9 m	BS	●35			
			BS	●39			
			BS	●35			
			BS	●37			
1.5 - 2.1		Silty Clay - brown, stiff, moist, high plasticity	BS	●25			
			BS	●25			
			BS	●20			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH2



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 2 m west from property line between 622 & 626 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt Concrete							
		Clay - grey, firm, moist, high plasticity - trace organic material - trace fine to coarse sand - trace fine gravel - trace silt - brown below 1.8 m	BS					●36	
0.5			BS	0.3	3.6	3.4	92.7	●35	-----
1.0			BS					●35	
1.5			BS					●39	
2.0			BS					●44	
2.1			BS					●45	

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH3



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 6 m west from property line between 634 & 638 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt Concrete							
		Clay - grey, firm, moist, high plasticity - trace fine sand - trace fine gravel - brown below 1.0 m - some silt from 1.0 m to 1.3 m	BS					●25	
			BS					●32	
0.5			BS	0.1	1.5	8.4	90.0	●36	—
			BS					●33	
1.0			BS					●22	
1.5			BS					●37	
2.0			BS					●45	
			BS					●43	

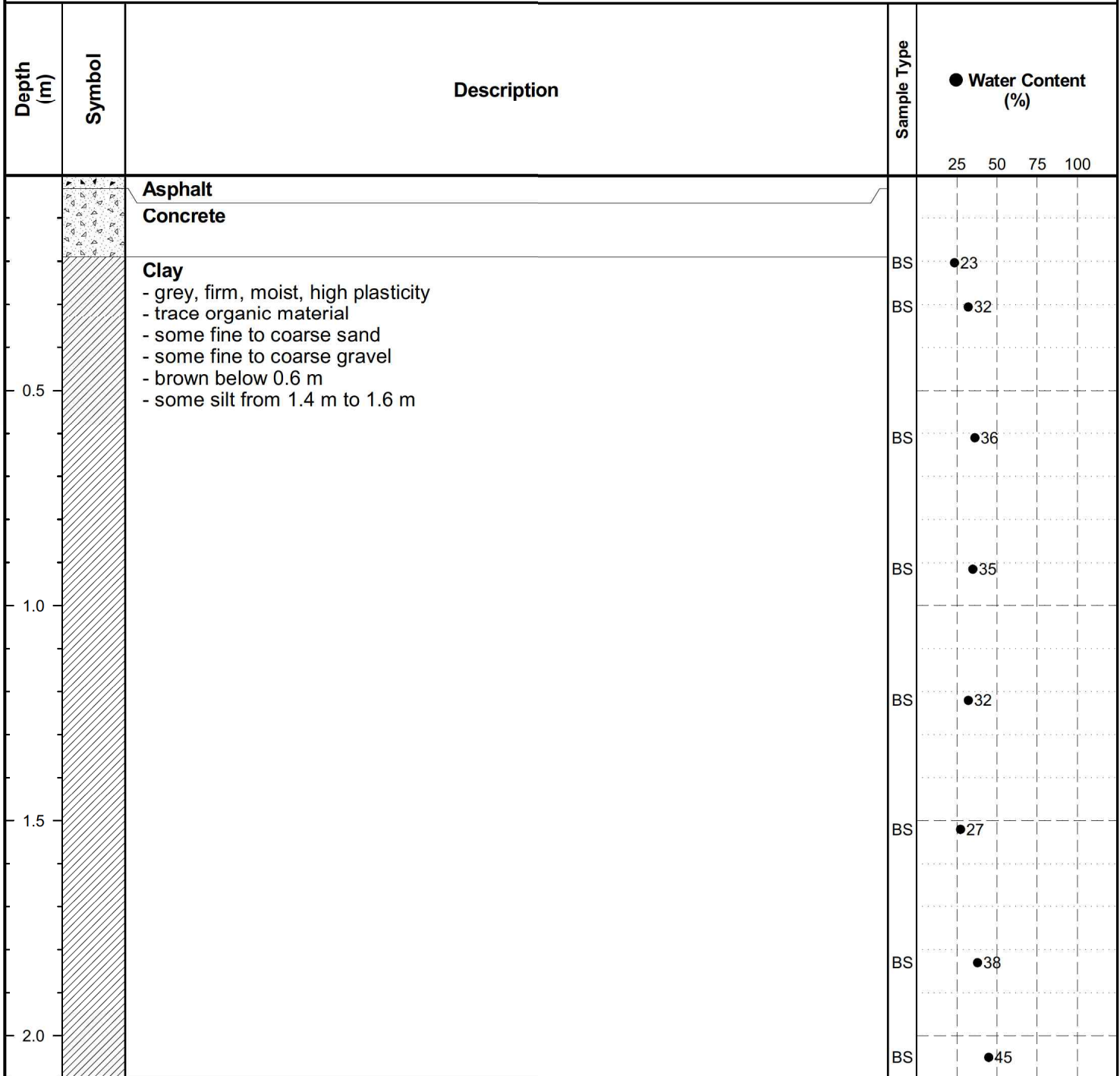
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH4



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 9 m east from property line between 646 & 650 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal



- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH5



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 1 m east from property line between 656 & 662 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Asphalt					
		Concrete					
		Clay - grey, firm, moist, high plasticity - some silt - some fine to coarse sand - trace fine gravel - brown below 0.6 m	BS		●27		
			BS		●32		
0.5			BS		●33		
			BS		●32		
1.0			BS		●30		
			BS		●36		
1.5			BS		●41		
2.0			BS		●45		

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.

TESTHOLE TH6



Project Name: 2013 Local Street Renewals
Project Location: Dunrobin Avenue, Golspie Street to Raleigh Street
Client: MMM Group Limited
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 5 m west from property line between 680 & 686 Dunrobin Avenue, 1 m from south curb

Date Drilled: July 24, 2013
Depth of Testhole: 2.1 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Asphalt symbol]	Asphalt					
0.1 - 0.2	[Concrete symbol]	Concrete					
0.2 - 0.5	[Clay Fill symbol]	Clay Fill - brown, firm, moist, medium plasticity - some silt - some fine to coarse sand - trace fine gravel	BS	●25			
0.5 - 0.6			BS	●19			
0.6 - 1.0	[Clay symbol]	Clay - brown, stiff, moist, high plasticity - trace organic material - some fine to medium sand	BS	●24			
1.0 - 1.1			BS	●32			
1.1 - 1.5			BS	●35			
1.5 - 1.9			BS	●37			
1.9 - 2.0			BS	●41			
2.0 - 2.1			BS	●45			

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Testhole was terminated at a depth of 2.1 m.



Core sample from Testhole TH1



Core sample from Testhole TH2



Core sample from Testhole TH3



Core sample from Testhole TH4



Core sample from Testhole TH5



Core sample from Testhole TH6

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
 111 - 93 Lombard Avenue
 Winnipeg, MB
 R3B 3B1

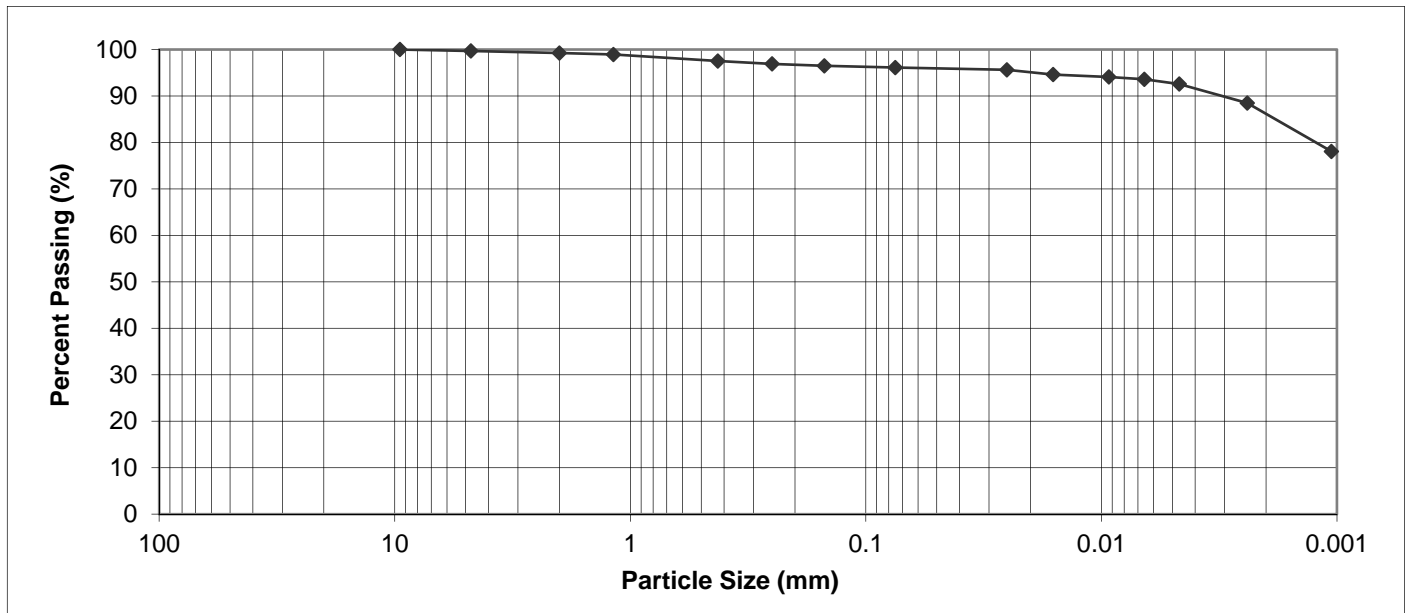
PROJECT: 2013 Local Street Renewals
 Dunrobin Avenue
 Golspie St to Raleigh St

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH2 at 0.6 m

DATE RECEIVED: July 24, 2013
 TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.7
2.00 mm	99.2

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.9
0.425 mm	97.5
0.250 mm	96.9
0.150 mm	96.5
0.075 mm	96.1
0.005 mm	92.7
0.002 mm	85.3
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.3	0.5	1.7	1.4	3.4	92.7	NT*

NT* Sample not tested for colloids

August 7, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng

PARTICLE SIZE ANALYSIS ASTM D422

MMM Group Limited
 111 - 93 Lombard Avenue
 Winnipeg, MB
 R3B 3B1

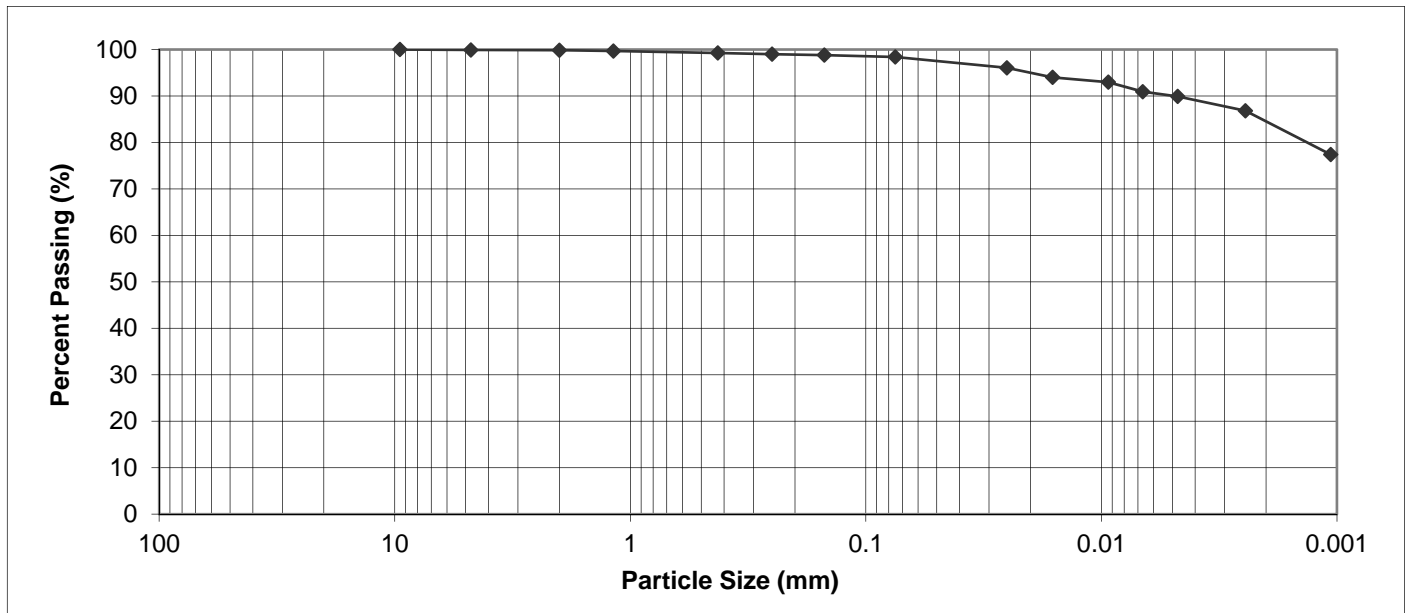
PROJECT: 2013 Local Street Renewals
 Dunrobin Avenue
 Golspie St to Raleigh St

Attention: Wally Jackson

PROJECT NO.: MMM-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH3 at 0.6 m

DATE RECEIVED: July 24, 2013
 TESTED BY: Nathan Boenders



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.9
2.00 mm	99.8

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.7
0.425 mm	99.2
0.250 mm	99.0
0.150 mm	98.8
0.075 mm	98.4
0.005 mm	90.0
0.002 mm	83.8
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.1	0.1	0.6	0.8	8.4	90.0	NT*

NT* Sample not tested for colloids

August 7, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng